

Preliminary Amendment

Applicant: Michael Bauer, et al.
Serial No.: Not yet assigned
(Priority Application No. 10 2004 008 135.2)
(International Application No. PCT/DE2005/000215)
Filed: Herewith
(Priority Date: 18 February 2004)
(International Filing Date: 9 February 2005)
Docket No.: 1431.170.101/FIN561PCT/US
Title: SEMICONDUCTOR COMPONENT HAVING A STACK OF SEMICONDUCTOR CHIPS AND
METHOD FOR PRODUCING THE SAME (as amended)

IN THE CLAIMS

Please cancel claims 1-23 without prejudice.

Please add claims 24-46 as follows:

| Patent claims WHAT IS CLAIMED IS:

- | 24. (New) A semiconductor component comprising:
| a stack of semiconductor chips, the semiconductor chips being arranged in a manner
| fixed cohesively one on top of another, the semiconductor chips comprising contact areas
| extending as far as the edges of the semiconductor chips; and
| conductor portions extending from at least one upper edge to a lower edge of the edge
| sides of the semiconductor chips and electrically connecting the contact areas of the
| semiconductor chips of the semiconductor chip stack.
25. (New) The semiconductor component as claimed in claim 24, comprising the
semiconductor chips having two or more different chip sizes.
26. (New) The semiconductor component as claimed in claim 24, comprising the
semiconductor chips having a different number of contact areas at their edges.
27. (New) The semiconductor component as claimed in claim 24, comprising where the
electrically conductive conductor portions are arranged adhesively on the semiconductor chip
edges, the semiconductor edge sides, the semiconductor top side and/or the semiconductor
rear side with a freely selectable stacking order.
28. The semiconductor component as claimed in claim 24, comprising where the
conductor portions comprise an adherent plastic resist which is filled with metallic
nanoparticles and is electrically conductive.

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29. (New) The semiconductor component as claimed in claim 28, comprising where the nanoparticle-filled plastic resist is soluble in a solvent.

30. (New) The semiconductor component as claimed in claim 24, comprising where the nanoparticle-filled plastic resist is patterned by laser removal.

31. (New) The semiconductor component as claimed in claim 24, comprising where the nanoparticle-filled plastic resist is patterned photolithographically.

32. (New) The semiconductor component as claimed in claim 24, comprising where the semiconductor chip stack comprises a multilayer rewiring layer comprising nanoparticle-filled electrically conductive patterned plastic resist layers and insulation layers arranged in between on the edge sides of the semiconductor chips.

33. (New) A method for producing a semiconductor component comprising a stack of semiconductor chips, the method comprising:

- | producing semiconductor chips with contact areas extending as far as the edges of the semiconductor chip;
- | cohesively fixing the semiconductor chips one above another to form a semiconductor stack;
- | encapsulating the semiconductor stack with a layer made of a plastic resist which is filled with nanoparticles; and
- | patterning the layer to form interconnect sections between the contact areas of the semiconductor chips stacked one on top of another.

34. (New) The method as claimed in claim 33, comprising spraying on the layer made of plastic resist for encapsulating the semiconductor stack.

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35. (New) The method as claimed in claim 33, comprising dipping the semiconductor stack, for encapsulation with a layer made of plastic resist, into a bath of nanoparticle-filled plastic resist.

36. (New) The method as claimed in claim 33, comprising effecting a laser removal method for patterning the nanoparticle-filled plastic resist to form interconnect sections.

37. (New) The method as claimed in claim 33, comprising carrying out a photolithography method for patterning the nanoparticle-filled layer made of plastic resist to form interconnect sections.

38. (New) The method as claimed in claim 33, comprising applying the interconnect sections to the semiconductor stack selectively by precision injection techniques.

39. (New) The method as claimed in claim 33, comprising applying multilayer interconnect sections in alternation with insulation layers to the semiconductor stack.

40. (New) A semiconductor component comprising:

a stack of semiconductor chips, the semiconductor chips being arranged in a manner fixed cohesively one on top of another, the semiconductor chips comprising contact areas extending as far as the edges of the semiconductor chips;

conductor portions extending from at least one upper edge to a lower edge of the edge sides of the semiconductor chips and electrically connecting the contact areas of the semiconductor chips of the semiconductor chip stack;

where the electrically conductive conductor portions are arranged adhesively on the semiconductor chip edges, the semiconductor edge sides, the semiconductor top side and/or the semiconductor rear side with a freely selectable stacking order; and

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where the conductor portions comprise an adherent plastic resist which is filled with metallic nanoparticles and is electrically conductive.

41. (New) The semiconductor component as claimed in claim 40, comprising where the nanoparticle-filled plastic resist is soluble in a solvent.

42. (New) The semiconductor component as claimed in claim 40, comprising where the nanoparticle-filled plastic resist is patterned by laser removal.

43. (New) The semiconductor component as claimed in claim 40, comprising where the nanoparticle-filled plastic resist is patterned photolithographically.

44. (New) The semiconductor component as claimed in claim 40, comprising where the semiconductor chip stack comprises a multilayer rewiring layer comprising nanoparticle-filled electrically conductive patterned plastic resist layers and insulation layers arranged in between on the edge sides of the semiconductor chips.

45. (New) The semiconductor component as claimed in claim 44, comprising the semiconductor chips having two or more different chip sizes; and having a different number of contact areas at their edges.

46. (New) A semiconductor component comprising:
a stack of semiconductor chips, the semiconductor chips being arranged in a manner fixed cohesively one on top of another, the semiconductor chips comprising contact areas extending as far as the edges of the semiconductor chips; and
means for providing conductor portions extending from at least one upper edge to a lower edge of the edge sides of the semiconductor chips and electrically connecting the contact areas of the semiconductor chips of the semiconductor chip stack.